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AUTHOR Dreher, Barbara B.
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ABSTRACT

The Sequenced Inventory of Communication Development (SICD), which was designed for remedial programming of children with language disorders, mental retardation, and specific language problems, was given to 13 cerebral palsied preschoolers along with the Peabody Picture Vocabulary Test. Time and environmental constraints required considerable modifications of the SICD, and the expressive section of the test was shortened. Among the findings were a significant difference between receptive and expressive language scores, not found with normal children; and wide discrepancies between both computed language ages and chronological ages. (Tabular data are provided). (DLS)

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Trial Use of the SICD in Testing Preacademic Cerebral Palsied Children

Sponsored by Liberal Arts Research Fund

May 1978

by

Barbara B. Dreher
Associate Professor
Wright State University
Dayton, Ohio

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Barbara B. Dreher

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Abstract

A new diagnostic kit which aims to measure communication behavior in small, sequential steps was applied to thirteen cerebral palsied preschoolers. Time and environmental constraints required considerable modifications, and the expressive section of the test was shortened. The scores representing receptive and expressive language were significantly different. Another finding was the gap between both computed language ages and chronological age.

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INTRODUCTION

In her book on the developmental potential of neurologically-imparied children Else Haeussermann (1958) states "an evaluation technique which depends largely on the observation of manifestations of comprehension, rather than on performance, requires a knowledge of the levels of communication." A new diagnostic test produced at the University of Washington purports to measure communication behavior in small (4 month intervals), sequential steps. The purpose of this trial was to apply this new tool in the assessment of cerebral palsied preschoolers.

The Sequenced Inventory of Communication Development (SICD) was designed at the University of Washington by Dona Lea Hedrick, Elizabeth M. Prather, and Annette R. Tobin. It was planned for use in remedial programming of young children with language disorders, mental retardation, and specific language problems. It has been used successfully with children who have sensory impairments, both auditory (Lynch, 1973) and visual, and with children who have varying degress of retardation. It has not been used with children who have motor impairments.

Efficiency was a key issue. Could the therapist test without unduly disrupting the school program? Children in the age range tested have a short attention span, with or without any additional

handicaps. Even a preschool program has a definite schedule for snacks and recess, and children get restless when deprived of these activities. Lastly, the examiner has time constraints, because of other professional responsibilities. For these reasons, even comprehensive testing must be done with the tools that yield the most useful information per unit time. The complete SICD takes 75 minutes to administer, so whatever substitutions and omissions that could be justified were applied. Overall test time was reduced to 30-40 minutes per child.

METHOD

Subjects

Thirteen children from a United Cerebral Palsy pre-school program were surveyed. The group included 5 boys and 8 girls ranging in age from 4 years, 8 months to 6 years, 2 months. File data were used to discover hearing or vision problems. One child had a severe, unilateral hearing loss.

Procedures for Testing Receptive Language

Because the Receptive Test of the SICD takes approximately 30 minutes to administer a shorter, but equally valuable test was chosen. The choice was easy because the originators of the SICD routinely administered the Peabody Picture Vocabulary Test (PPVT) to all the subjects in the normative study. The Pearson Product-Moment Correlation Coefficient between the receptive scores of the SICD and the scores on the PPVT (Form A) was computed at .8097. This positive correlation was statistically significant at the .001 level. On these grounds and because its administration time is only 10-15 minutes the PPVT was

used to test receptive language. Furthermore, the PPVT is familiar to most therapists, is widely used and known, is standardized on a large group of children (4,000), and is suitable for children as young as 21 months. (While Carrow's Auditory Test for Language Comprehension is certainly broader in coverage, its age range does not extend below 3 years).

The PPVT does require a motor response. The subject is asked to point to the picture for the word the examiner says. Because the group being tested was expected to have motor deficits, the pictures were xeroxed, cut up and taped for use on a flannel board. For each plate the 4 choice pictures were arranged in the corners of an 18" x 24" board. This allowed the examiner to assess recognition by eye-tracking instead of pointing. Only one child needed this adaptation.

Procedures for Test Expressive Behaviors

After the receptive testing the Expressive Scale of the SICD was administered. This scale consists of 46 items requiring either motor, vocal or verbal evidence of the child's ability to imitate, initiate or respond communicatively. All the "Parent Response" items had to be eliminated as neither parents nor teacher were available in the testing situation. This resulted in 32 items for possible attainment during the session.

In general, the items are arranged along a developmental scale from differentiated crying (Parent Response) at the 4 month level to answering "what" questions at 48+ months. Only a few items have subitems that are appropriate for different ages. For instance,

item 34 asks for plurals of car, cat, dog, and box. Correct performance on these four subitems would be expected at 36, 40, 40, and 48 months respectively.

Only item 43 was administered out of sequence. It calls for the child's exact responses to "Hi, (name)" and "How are you?" Since these remarks are part of a normal greeting, they were given at the beginning of the interview.

The basal and ceiling guidelines are not as rigorous on the SICD as on the PPVT. The SICD manual directs that a basal is established when three consecutive complete test items have been passed. Likewise, a ceiling is obtained when three consecutive complete test items have been failed. Only occasionally were other items in the same age interval as either the basal or ceiling tested.

Another time-saving change in test administration was omission of the 60-response language sample. This was part of the supplementary testing of the normative group and would have yielded a MLR (Mean Length of Response) and SCS (Structural Complexity Score). Acquiring such a sample takes tact and rapport. It also requires considerable time to score.

The SICD manual showed correlation coefficients between the Expressive Communication Age (ECA) and the MLR and SCS OF .7613 and .7444 respectively. These correlations, obtained on the normative group, are statistically significant at the .001 level. For that reason, this examiner felt that the MLR and SCS could be omitted without serious harm to the validity of the test.

RESULTS

The PPVT was scored as directed in the manual. The ECA was computed as directed in the SICD manual. The first step was transferring the child's successes and failures, as recorded on the test form, to the corresponding profile. Numbered items are placed on the profile sheet within the age interval where at least 75% of the normative group passed the items. The percentage of success is obtained for each age interval by dividing the number of items passed by the total number of items tested. The "T age" is the oldest level of 2 or more consecutive ages at which child scored 80% or better. Computations on the T age plus or minus several intervals (depending on pattern or magnitude of percentages) yields the ECA.

The PPVT was standardized on over 4,000 subjects, while the SICD has been standardized on 252 Caucasian children between 4 and 48 months in age. Test results from each individual in this survey were compared to the published age level norms. Table I displays the chronological age, mental age on PPVT, and ECA.

The data from the PPVT and the SICD were analyzed by a t-test for difference between dependent means. The means of these variables are significantly different at the .001 level. There was also a significant difference between the age scores on both tests and chronological age. Computed language ages ranged from 1 year behind chronological age (girl 7) to 3 years and 2 months behind chronological age for boys two and three. Girl 6, as noted on the table, exceeded the SICD scale altogether.

Discussion

The significant difference between the scores representing receptive and expressive language does not parallel the experience of the test originators. Hedrick, Prather and Tobin found a correlation coefficient of .9477 between the receptive and expressive scores of their normative group. This difference may indicate the kind and amount of language handicap the cerebral-palsied children suffer or it may indicate that the SICD was adapted and curtailed too much. More testing, with larger numbers of children, with more cooperation and fewer constraints, needs to be done.

The other significant results of this study are the wide discrepancies between both computed language ages and chronological age. Similar discrepancies were reported by Denhoff and Holden (1951). Their group included all types of cerebral palsied children and they found that first words occurred at a mean age of 27 months. Among athetoid and spastic children the mean age for three-word utterances was 78 months (Byrne, 1959). This makes a drastic comparison with normal children who develop the three-word utterance by 30 months of age.

Originators of the SICD claim that it is an aid in determining the child's level of functioning and that its results should be integrated with other assessment tools. Lynch and Tobin found it especially helpful in selecting specific target behaviors for therapy. The 4 month age intervals in the profile of the child's current functioning indicate the next most likely behavior for successful training.

If programming in small steps can bring success to the cerebral palsied child, more attempts must be made to find tests that measure

small steps. Since the SICD has been found to measure those steps for children with language disorders and sensory impairments, it must be tried again and again with the cerebral palsied. The frustrating results of this trial should serve as an impetus to further research under better conditions.

TABLE 1

SURVEY OF LANGUAGE SKILLS OF
PREACADEMIC CEREBRAL PALSIED CHILDREN

SUBJECT	HEARING DEFICIT	VISION DEFICIT	CHRONOLOGICAL AGE (months)	MENTAL AGE ON FORM A, PEABODY PICTURE VOCABULARY TEST (months)	EXPRESSIVE COMMUNICATION AGE ON SICD TEST (months)
Boy 1	no	yes	65	53	44
Boy 2	no	possible	74	45	36
Boy 3	no	no	74	53	36
Boy 4	no	yes	64	56	48
Boy 5	no	no	58	62	44
Girl 1	severe loss in left ear	no	64	53	48
Girl 2	no	no	58	38	28
Girl 3	no	no	65	49	absent
Girl 4	no	possible	64	49	absent
Girl 5	no	possible	67	67	44 *
Girl 6	no	no	63	67	48+**
Girl 7	no	no	56	absent	44
Girl 8	no	no	57	absent	36

* excessively shy in test situation

** highest range on scale. S. scored 78% here

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